

SUMMARY
BY ALYSSA BURNETTE

THE GREAT RACE

BY LEVI TILLEMANN



Summary of The Great Race by Levi Tillemann

Written by Alyssa Burnette

Learn about the race to craft the car of the future.

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Introduction

Do you love your car? You probably do. Whether you enjoy driving or you prefer to sit back and relax as a passenger, everybody loves their cars. We love that they protect us from the elements. We love that they come with cool features like radios and heated leather seats. We love the fact that, on cold winter nights, we can drive safely down the road, snuggled up in our heated seats with Christmas music on the radio. Can you imagine your life without that mode of transportation? Most of us would shudder at the thought! That's because the invention of the car changed the world. That's the simplest and most accurate definition of the human relationship with the automobile. Because without this revolutionary addition to transportation, we would still be stuck in the dark ages. Can you imagine shivering in a horse and buggy while you slowly plodded home through the snow?

Indeed, without the invention of the modern automobile, our transportation options would be extremely limited. You could forget quickly popping out to a drive-through or taking a cross-country roadtrip. What is comfortable and adventurous in a car would be brutal and painstaking in a more primitive mode of travel. There's no doubt about it: the invention of the car revolutionized our world for the better. The people who raced to bring their vision to life were heralded as gods of the future. And today, we bask in our enjoyment of their creations. But even though we currently treasure our modern vehicles, the visionaries of today believe that their work is not yet finished. They believe that we can create something even better: a new mode of transportation that will be better than anything we've experienced before. That's why the race to build the electric car is so critical. And over the course of this summary, we'll explore that race and its impact on our society.



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Why do we Need Electric Vehicles?

If you've ever watched a car commercial, then you know that every major car company is constantly touting their ability to craft the latest and greatest in automotive technology. We have cars that can connect to your Alexa, cars that can stop themselves, and cars that can anticipate threats as you drive. But you've probably noticed that the biggest selling point is environmentally friendly vehicles. This concern dominates both our advertising and our google searches; a quick scan of the internet reveals such popular searches as "12 'Greenest' Cars for 2020," "The Most Environmentally Friendly Cars of 2020," and "Why You Need a "Green" Car." Likewise, automotive companies such as Honda and Ford are quick to display their "Environmentally Friendly, Eco Cars, and Hybrid Vehicles" at the top of their web pages. And if you park in a public parking lot, you might find that charging stations for hybrid cars now dominate many parking spaces.

But if you don't have your finger on the pulse of the hybrid vehicle trend, you might find yourself wondering what all of this means. What is this preoccupation with eco-friendly cars? And why does it matter? To answer that question, we need to step back in time and explore the history of the automotive industry and its impact on the environment. Although we could devote the entire focus of this book to that topic, we'll try to simply hit the highlights. The short version is that the problem with automobile emissions began in the mid-1900s when people became increasingly reliant on cars. After World War II, automobiles became so popular that pretty much everyone had a car. With record numbers of people on the road, cities began to struggle with air pollution problems that they had never seen before. This was made worse by the fact that there were no restrictions on automobile emissions. As a result, cities were literally choking under a visible blanket of thick, dense smog. Many citizens developed asthma and breathing problems that they had never battled before. People began to worry about the impact that this pollution would have on the environment and on public health and safety.

This led to the formation of the Environmental Protection Agency (commonly referred to as the EPA). And in 1970, Congress passed the Clean Air Act. The EPA's website summarizes the purpose of the Clean Air Act by asserting that "the Clean Air Act requires the EPA to establish national ambient air quality standards for certain common and widespread pollutants based on the latest science. EPA has set air quality standards for six common "criteria pollutants": particulate matter (also known as particle pollution), ozone, sulfur dioxide, nitrogen dioxide, carbon monoxide, and lead. Under the Clean Air Act (or CAA), states are required to adopt enforceable plans to achieve and maintain air quality meeting the air quality standards. State plans also must control emissions that drift across state lines and harm air quality in downwind states. Other key provisions are designed to minimize pollution increases from growing numbers of motor vehicles, and from new or expanded industrial plants. The law calls for new stationary sources (e.g., power plants and factories) to use the best available technology, and allows less stringent standards for existing sources."

When the EPA put these protections in place, they took the first step toward regulating automobile emissions and minimizing pollution. But our reliance on automobiles has only increased through the years, which means that the threat to the environment has grown along with it. Environmental activists have responded to this by advocating for new regulations to protect us from additional harmful emissions. And this has spurred the movement for "green" or eco-friendly automobiles. In short, the purpose of an eco-friendly car is to reduce emissions altogether. If a vehicle is completely electric, then it will no longer produce toxic emissions. And that's how the race to create the best electric vehicle started.



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Who is Involved in the Electric Car Race?

If you've ever driven down the road, you've probably noticed that Japan and China are major automotive superpowers. Nissan, Kia, Honda, Mazda, Subaru, Mitsubishi, and Toyota are all Chinese and Japanese brands. So, because China, Japan, and the United States all have such a massive hold on the automotive industry, it follows that they would all be deeply invested in crafting a superior electric vehicle. But that wasn't always the case. Having successfully developed a line of popular hybrid cars, Toyota wasn't really interested in expanding their market to cover electric vehicles. And the same was true for many other popular Japanese and Chinese brands. Rather than developing new things, most other brands were concerned with emulating Toyota's success with hybrids.

But one Japanese engineer wasn't content to do what everybody else was doing. Takafumi Anegawa was a nuclear engineer and he made it his personal mission to develop the electric car. Anegawa felt that hybrids were a step in the right direction, but because they weren't completely eco-friendly, he felt that Japan could do better. He wanted his country to be responsible for developing a machine that would make the world a better place and he was determined to make it happen. He also wanted to help Japan transcend its dependence on foreign oil, so he wanted to bypass oil as an ingredient in his electric car altogether. He intended to replace this component with nuclear energy. Unfortunately, however, Japan isn't a great climate for nuclear power plants. Because Japan is regularly besieged by powerful natural disasters, the entire country could be wiped out if a nuclear power plant was struck by a typhoon. So, many companies weren't keen to help with his idea for that reason.

But others were willing to take the risk. It took a lot of time and effort and a lot of shopping his idea around, but eventually Anegawa found someone who would say yes: Mitsubishi. Anegawa and Mitsubishi ultimately

partnered with Subaru and the Toyota Electric Power Company (or TEPCO) to produce his vision: the completely electric Mitsubishi iMiev.



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The United States' Bid for Dominance

What do you remember Elon Musk for? Is it his baby's wacky name? (Let's be honest, "X Æ A-12 Musk" is too out there, even for a celebrity!) Or maybe you know him primarily for his contributions to technology. But if you're not familiar with him at all, let's go over a quick recap: Elon Musk is a South African-born American entrepreneur and businessman. He is primarily known for his success and innovations in the fields of business and technology. Along with Peter Thiel, he co-founded X.com in 1999 (which later became PayPal), SpaceX in 2002 and Tesla Motors in 2003. Musk became a multimillionaire in his late 20s when he sold his start-up company, Zip2, to a division of Compaq Computers.

Tesla is a revolutionary electric car company. That's right-- electric cars are kind of his whole thing. So, it's no surprise that Elon Musk and Tesla are the United States' poster children for sustainable automotives. Having received start-up money from the United States government, Tesla's first electric car did very well indeed. It was marketed primarily towards America's super-rich and its success fueled Musk's future projects. Building on the success of his first, exclusive design, Musk set out to design something that would be more commercially available: the Model S. The Model S is a luxury sedan that was designed with one purpose in mind: to be faster, cooler, smarter, and sleeker than any traditional vehicle on the market. Musk knew that if he could make electric cars look cooler than the options, people would be more likely to buy them, even if those customers weren't especially interested in the environment. And he was right! With the ability to accelerate in one second and a battery life that allows it to run 300 miles, the Model S is every car fanatic's dream. It also enabled Musk to dominate the current electric car market.

His success also occurred at the perfect time. Because just as the Model S took off, Japan's electric vehicle market took a massive hit. In the previous chapter, we mentioned that Japan is a geographical nightmare for any nuclear power plant. Because the island is regularly hit with severe

earthquakes and tsunamis, the presence of a nuclear power plant poses a significant threat to national security. This was precisely the reason why many automotive companies declined to help Takafumi Anegawa with his vision. And although it was cause for celebration when Mitsubishi finally said yes, it also meant that Japan was exposed to a new threat. So, when a tsunami inevitably struck in March of 2011, the presence of Anegawa's power plant nearly caused the country to explode in a nationwide nuclear disaster.

In addition to destroying Japan's economy, the tsunami also stole thousands of lives and ripped apart homes, families, and businesses. And to make matters worse, Anegawa's nuclear plant was also responsible for a horrific spill; the explosion at the plant sent a flood of toxic waste into Japan's water system. Unsurprisingly, this disaster caused the plant to declare bankruptcy. Every cent they had now went towards cleaning up their mess. With the plant destroyed and the economy in ruins, no one was interested in the latest and greatest electric vehicle. The death blow struck when diplomatic relations with China took a major hit and China withheld deliveries to Japan. This embargo also included a certain chemical element that was crucial for the production of Anegawa's electric car. Without funding, a nuclear power plant, and his core chemical, it was impossible to continue production on the Japanese version of the eco-friendly vehicle.

China took advantage of Japan's loss to attempt to seize control of the electric car market themselves. Unfortunately, however, their power grab was both poorly timed and unsuccessful. Because China has the largest population in the world and a penchant for new and innovative technology, one could easily assume that they would go crazy for the latest electric vehicle. But in reality, the electric car doesn't really suit the lifestyle of most Chinese people. In fact, due to the abundance of available public transport options, most Chinese people don't need a car at all. So, despite China's best efforts, the electric car didn't really take off for them; people continued to privilege public transportation over high-performance cars for personal use. The lack of popularity in China and the crushing failure of the market in Japan meant that the United States was able to seize control of the electric vehicle market.



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Final Summary

The invention of the automobile revolutionized the world. But it also introduced a new threat to our environment because of the toxic emissions produced by cars that run on fossil-fuel. This means that electric vehicles are the transportation of the future and that many countries are interested in leading the charge to create one. Although Japan, China, and the United States were in a bitter competition, a natural disaster in Japan and a lack of interest in China caused both countries to drop out of the great electric vehicle race. As a result, the United States ultimately won the race to produce the fastest and most successful electric vehicle that is commercially available to the public.



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